

## **MDOT Road Terms and Definitions**

**Aggregate** - A substance composed of mineral crystals of one or more kinds, or of mineral rock fragments used in pavement.

**All-season standards** - No seasonal load-limit on roadway.

**Alligator Cracking** – Also referred to as fatigue cracking, a series of interconnecting cracks in an asphalt pavement surface that forms a pattern resembling an alligator's hide or chicken wire. In its early stages, alligator cracking may be characterized by a single longitudinal crack in the wheel path generally caused by repeated traffic loadings. (See Fatigue Cracking.)

**Arterial** - A road that carries traffic not carried by freeways to important traffic generators, such as airports or regional shopping centers.

**Average Daily Traffic Counts** - The average number of vehicles using a specific roadway in one day.

**Bitumen** - A black tarry substance that occurs as a natural product that is used in cement and the construction of pavement.

**Bituminous** - Of or pertaining to bitumen.

**Bituminous Asphalt/Blacktop/Pavement** - A pavement comprising an upper layer or layers of aggregate mixed with a bituminous binder, such as asphalt or tar.

**Bridge Deck** – The driving surface of the bridge; typically concrete, nine inches thick containing a top and bottom mat of reinforcing steel.

**Bridge Replacement** - Complete removal and replacement of the existing bridge.

**Business Loop (BL)** - A surface street route that leads into a downtown business district and returns to the freeway at the other end. Frequently, the business loop is the alignment of the original highway before that highway was bypassed. (See Business Route.)

**Boulevard (Blvd)** - A wide street with a landscaped center island running the length of the street, usually found in urban areas.

**Business Route (BR)** - A route that connects the freeway or thoroughfare with the downtown and commercial areas of a city or town. Business routes are primary arterials and begin and end on the interstate. Business Loops and Business Spurs are types of Business Routes. Business Loop implies that the business route will return to the parent route, while a Business Spur implies that the business route will only spur into the commercial area and not return to the parent route.

**Business Spur** - A surface street route leading from the interstate highway into the central commercial district. The spur route ends upon reaching a specified point within that urban area. (See Business Route.)

**Capital Preventative Maintenance** - Plan for cost-effective treatments to an existing road system that preserves or improves the condition of the system without significantly increasing structural capacity.

**Changeable message sign** - An electronic sign used on roadways to provide information about congestion, crashes, work zones, or speed limits on specific highway segments, and suggest alternative routes to motorists. Also used to convey information about special events or alerts.

**Check Station** - See Weigh Station.

**Chip Seal** - A surface treatment in which the pavement is sprayed with asphalt (generally emulsified) and then immediately covered with aggregate and rolled. Chip seals are used primarily to seal the surface of a pavement that has non load-associated cracks and to improve surface friction, although they also are commonly used as a wearing course on low volume roads. They are typically used to extend the life of the pavement surface by sealing out moisture, which can cause major damage to pavement, until major repairs can be made.

**Cold Mill** - Removal of pavement surface material either to prepare the surface to receive overlays (by removing rutting and surface irregularities) or to restore pavement to the correct specifications. This process also is used to remove oxidized asphalt concrete.

**Collector** - A road funneling traffic from residential or rural areas to both principal and minor arterials.

**Conflict** - These occur when traffic streams, moving in different directions, interfere with each other, i.e., merging, diverging and crossing. (Also called Traffic Conflict.)

**Construction (Project Phase)** - This is the actual construction of a project. The public will see the proposed work implemented along the roadway in this phase.

**Context Sensitive Solutions (CSS)** - MDOT works with communities to identify local transportation needs, taking into account statewide priorities, including the Statewide Long Range Plan, the Five Year Plan, and the environmental impact. CSS encourages early and continuous involvement in the planning process so the final result is both an asset to the community and sensitive to community and environmental concerns

**Continuous Traffic Flow** - A steady, unbroken stream of traffic.

**Controller** - A complete electrical mechanism, which is mounted in a cabinet, for controlling traffic signal operation.

**Crack** - A fracture in the pavement surface not necessarily extending through the entire thickness of the pavement. Cracks generally develop after initial construction of the pavement and may be caused by thermal effects, excess loadings, or excess deflections, which are movements in or under the pavement. (See Working Crack.)

**Crack Filling** - The placement of materials into non-working cracks to substantially reduce the infiltration of water and other matter, while also reinforcing the adjacent pavement. Crack filling is different from crack sealing (see Crack Sealing).

**Crack Sealing** - A maintenance procedure that involves placement of specialized materials into working cracks using unique configurations to prevent the infiltration of water and other matter into the crack and into the underlying pavement layers. (See Working Crack.)

**Crash Potential** - The statistical degree of safety of a location or area.

**Culvert Replacement** - This type of project includes the removal and the replacement of the culvert, a device used to channel water beneath a road, railway or embankment.

**Cure** - The time needed for specific road materials - such as concrete - to properly set in order to achieve the desired engineering properties after placement and finishing. Improved properties may be achieved by controlling temperature or humidity during curing.

**Deck Replacement** - This type of project includes the removal and replacement of the bridge deck.

**Delineators** - Road marks that define lanes and shoulders; safety measures intended to guide drivers.

**Diamond Grinding** - A process that uses a series of diamond-tipped saw blades mounted on a shaft or arbor to shave the upper surface of a pavement in order to remove bumps, restore pavement rideability, and improve surface friction.

**Dowel** - Typically, a plain round steel bar that extends into two adjoining slabs of pavement as a transverse joint placed parallel to the center line so as to transfer the weight of vehicles across joined sections of pavement. (See Retrofit Dowel Bars.)

**Dowel Bar Retrofits** - See Retrofit Dowel Bars.

**Downstream** - Points on a route further ahead in the direction of traffic flow.

**Driver Response** - Driver reaction to a message or condition on a highway, such as a sign or traffic signal.

**Efficient System(s)** - A route or network of routes on which traffic flows with minimum delay and congestion.

**Emulsified Asphalt** - A liquid mixture of asphalt binder, water, and an emulsifier.

**Fatigue Cracking** - See Alligator Cracking.

**Freeway (Fwy)** - A freeway is an access-controlled, divided highway designed for the unimpeded movement of large volumes of traffic. Characteristics of a freeway include controlled access through the use of interchanges, and grade separation at intersections.

**Frost Heave** - A process in which the ground freezes and thaws, creating potholes.

**Gaps** - Breaks in the traffic stream long enough to permit vehicles or pedestrians access across or into the traffic stream.

**Gore** - The V-shaped area that separates through-traffic from exiting or entering traffic on freeways and highways.

**Grade Separation** - A crossing that uses an underpass or overpass to eliminate a traffic conflict.

**Grooving** - The process used to cut slots into a pavement surface to provide channels for water to escape beneath tires, improve skid resistance and reduce the potential for hydroplaning.

**Highway (Hwy)** - An arterial highway that provides direct access to buildings and intersections. A highway characteristically includes intersections and design features controlling speed and the safe movement of traffic.

**Hot Mix Asphalt Concrete (HMAC or HMA)** - A carefully controlled mixture of asphalt binder and well-graded, high quality aggregate thoroughly compacted into a uniform dense mass. HMAC pavements also may contain additives such as anti-stripping agents and polymers.

**Indirect Left** - See Michigan Left.

**Intelligent Transportation Systems (ITS)** - Technology that serves to enhance transportation mobility, conserve energy, protect the environment, and improve safety. ITS technology includes changeable message signs and traffic signal controls.

**Interchange** - An interchange is the junction of a freeway and another road. To provide access control, interchanges keep the traffic flowing on the freeway, but there may be some restrictions on the connecting routes. A complete interchange provides for movements in all directions; a partial interchange has some missing connections.

**Lane Miles** - The number of miles of pavement going in one direction on any given road. Miles of roadway multiplied by the number of lanes equals lane miles.

**Law Observance Study** - A survey designed to determine the effectiveness of various traffic control devices.

**Limited Access Highway**- A highway or section of highway designed for travel by registered motor vehicles. Access is limited to intersections, and driveways are generally not allowed. Freeways are a common type of limited access highway.

**Load Transfer** - The ability to distribute the weight of vehicles across joined sections of pavement. This is a critical factor in extending pavement life.

**Median** - A barrier, constructed of concrete, asphalt, or landscaping, that separates two directions of traffic.

**Michigan Left** - Michigan Lefts are a type of turn unique to Michigan. Where a Michigan Left is in place, left turns at the intersection are not allowed. Instead, to turn left, you must drive straight or turn right, then make a U-turn at a median crossover, marked with a sign. Michigan Lefts have been part of Michigan roadways since at least the late 1960s. Michigan Lefts provide 20 to 50 percent greater capacity than direct left-turns. They reduce average delays to left-turning vehicles and through-traffic, as well as increase the safety by reducing the number and severity of crashes. A Michigan Left also is sometimes known as an indirect left, median U-turn, median U-turn crossover or boulevard turnaround. An example of a Michigan Left is Woodward Avenue at Square Lake Road in Oakland County.

**Microsurfacing** - A mixture of polymer modified asphalt emulsion, mineral aggregate, mineral filler, water, and other additives, properly proportioned, mixed, and spread on a paved surface. Microsurfacing is used on high volume roadways to correct wheel path rutting and provide a skid resistant pavement surface.

**Milling** - Grinding off the top layer of pavement.

**Noise Wall** - See Sound Wall.

**Non-motorized** – A transportation mode not using motorized vehicles, e.g., walking, bicycling, horseback riding, and roller-blading.

**Overbanding** - Overfilling a joint or crack in the pavement surface in order for a thin layer of crack or joint sealant to spread onto the pavement surface.

**Overlay - Deep** - This type of project includes the removal and replacement of the top portion of the concrete bridge deck to just below the top mat of reinforcing steel.

**Overlay – Shallow** – This type of project includes the removal and replacement of the top 1.5 inches of the concrete bridge deck.

**Patch** - Repair of a localized defect in the pavement surface.

**Pavement Miles** - The total number of miles of pavement in both directions of a road/freeway.

**Pavement Preventive Maintenance** - Planned strategy of cost-effective treatments to an existing roadway system to extend the life of the pavement, retard future deterioration, and maintain or improve the functional condition of the system without increasing the structural capacity.

**Pavement Reconstruction** - Complete removal and replacement of the existing pavement structure, which may include new and/or recycled materials. (See Reconstruct.)

**Pavement Rehabilitation** - Structural enhancements that extend the service life of an existing pavement and/or improve its load carrying capability. Rehabilitation techniques include restoration treatments and structural overlays.

**Performance Period** - Period of time that a newly constructed or rehabilitated pavement structure is expected to perform before deteriorating to a point requiring another fix.

**Potholes** - A hole in the pavement surface, typically caused by moisture.

**Preliminary Engineering (Project Phase)** - This is the design phase of a project. Studies, surveying, plan preparation, obtaining permits and stakeholder input are completed in this phase of a project.

**Preservation** - Preservation involves repairing an existing pavement or bridge to restore it to a better condition. Major preservation improvements are upgrades to satisfy the latest state and federal requirements and width upgrades and/or shoulder improvements, ramp improvements, and bridge work.

**Profilometer** - A computer-aided device used to measure the smoothness of the road surface.

**Progressive Movement** - Traffic moving at a constant speed with a minimum number of stops and starts.

**Reconstruct** - A term used to describe a road project where the roadway is taken down to its base to allow necessary repairs to be made. See Pavement Reconstruction.

**Rehabilitation** - A variety of different fixes that do not include the replacement of the entire pavement or bridge. Rehabilitation fixes extend the service life of an existing pavement or bridge. Examples of pavement rehabilitation fixes include concrete pavement repair, bituminous or concrete overlays, mill and resurfacing, and rubblize and resurface. Examples of bridge rehabilitation fixes include deck overlays, railing replacement and repairs to portions of the bridge.

**Restoration** - Restoration involves repairing an existing pavement or bridge to restore it to a better condition. Major restoration improvements are upgrades to satisfy the latest state and federal requirements and width upgrades and/or shoulder improvements, ramp improvements, and bridge work.

**Resurface** - Involves the adding of new layers of pavement that extend the service life of an existing pavement and/or improve its load carrying capability.

**Retrofit Dowel Bars** - A technique used to distribute the weight of vehicles across joined sections of pavement. Dowels are installed into slots cut into the surface of an existing concrete pavement to distribute the weight across existing joined sections of pavements. (See Dowel.)

**Rideability** - A measure of the ride quality of a pavement as perceived by its users or roughness measuring equipment. (See Profilometer.)

**Right-of-Way (ROW)** - A term denoting land and/or property acquired for - or devoted to - transportation purposes. Right-of-Way also is a project phase.

**Right-of-Way Assignment** - The "green" phase of a stop-and-go signal when a certain movement of traffic is permitted to flow.

**Roadside Facilities** - These include auxiliary facilities along our roadways that support transportation. Typically these include rest areas, travel information centers or car pool parking lots.

**Route Miles** - The total number of miles a car travels to get from point A to point B.

**Roundabout** - A modern roundabout is an unsignalized circular intersection. Drivers must yield to vehicles already in the roundabout before entering. Roundabouts increase safety because there is no stopping in a roundabout, no left turns across opposing traffic lanes, and vehicles must slow down to a safe speed to enter the roundabout.

**Rubblize** - A process in which concrete is broken up into uniform size pieces, rolled flat and covered with a new surface, usually asphalt.

**Sandblasting** - A procedure in which compressed air is used to blow sand particles at a pavement surface to abrade and clean the surface. Sandblasting is a step in the partial-depth patching and joint resealing process.

**Sand Seal** - An application of asphalt binder, normally an emulsion, covered with a fine aggregate. It may be used to improve the skid resistance of slippery pavements and to seal against air and water intrusion.

**Scoping** - The process in which project's parameters are determined. It is the act of determining the type and size of the project needed in order to address an identified transportation system need.

**Sealant** - A material that has adhesive and cohesive properties to seal joints, cracks or other various openings against the entrance or passage of water or other debris in pavements.

**Sealing** - The process of placing sealant material in prepared joints or cracks to minimize intrusion of water and incompressible materials. This term is also used to describe the application of pavement surface treatments.

**Signal Cycle** - The time required for all phases of a traffic signal to take place - from beginning of green to beginning of green.

**Signal Warrants** - A set of guidelines designed to determine the need for a stop-and-go traffic signal.

**Single Point Urban Interchange (SPUI)** - A variant on the standard diamond interchange, in which all traffic meets at one single traffic signal in the center of the bridge over the

freeway (or below the freeway). These interchanges can accommodate more traffic in smaller spaces, hence their appeal in urban areas.

**Slurry** - Mixture of a liquid and fine solid particles that together are denser than water.

**Slurry Seal** - A mixture of slow - setting emulsified asphalt, well - graded fine aggregate, mineral filler, and water. It is used to fill cracks and seal areas of old pavement, to restore a uniform surface texture, to seal the surface in order to prevent moisture and air intrusion into the pavement, and to improve skid resistance.

**Sound Wall** - A structure built alongside a roadway for the purpose of reducing vehicular noise in nearby neighborhoods. (Also called Noise Wall.)

**Spalling** - Cracking, breaking, chipping, or fraying of a concrete edge or surface.

**Speed Checks** - Radar studies conducted to obtain information concerning the distribution of vehicle speeds through an area.

**Speed Study** - The gathering of information about vehicle traffic obtained during light - to - medium traffic conditions on a weekday. The speed data is collected by recording the speeds of free - flowing motor vehicles using radar or other speed measuring devices. A representative sample of vehicular speeds is recorded. The speed study determines what the 85<sup>th</sup> percentile speed is (or the speed 85 percent of motorists are traveling) at that location.

**State Trunkline** - This network of road types (Interstate, Michigan and U.S. routes) supports the state's commercial activities. A key element in the state's economy, it connects commercial and manufacturing areas, and enables goods to be moved across the state.

**Streetscape** - Equipment, such as lights, plant material, or benches, are placed off the street to improve or enhance its appearance and usability.

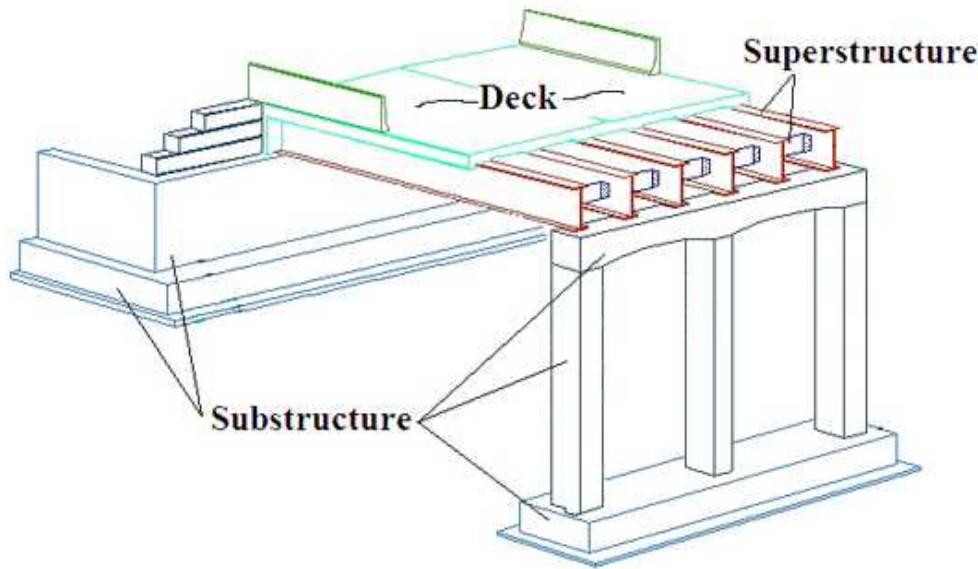
**Substructure Repairs** - This type of project includes work on the portion of the bridge that supports the beams. This work is done to extend the service life of the bridge.

**Superstructure** – Top portion of the bridge, usually above the top of the piers.

**Superstructure Repairs** – This type of project includes work on the portion of the bridge that supports the bridge deck. Typically beam end repairs. This work is done to extend the service life of the bridge.

**Superstructure Replacement** - This type of project includes the removal and replacement of the bridge deck and beams.





Structure elements of a typical highway bridge

**Surface Seal** - See surface treatment.

**Surface Treatment** - Any application applied to an asphalt pavement surface to restore or protect the surface characteristics. Surface treatments include a spray application of asphalt (cement, cutback, or emulsion) and may or may not include the application of aggregate cover. Surface treatments are typically less than 25 millimeters thick. Also called surface seals, seal coats or chip seals.

**Thin Overlay** - A Hot Mix Asphalt (HMA) overlay of 38 millimeters (1.5 inches) or less.

**Timing Permit** - A form indicating/authorizing how a traffic signal will operate; when it will flash, how much “green time” will be allotted to each leg of the intersection, how it will operate in relation to adjacent signals, and what special provisions will be made for high-volume, peak-hour traffic.

**Tine** - To create grooves in the pavement for traction.

**Traffic Calming** - A set of street designs and traffic rules that slow and reduce traffic, encouraging walkers and cyclists to share the street. Traffic calming measures include: traffic circles, raised crosswalks, sidewalk extensions, speed bumps and medians.

**Traffic Circle** - A traffic circle is an intersection with a circular shape and, usually, a central island. In some traffic circles, two-way traffic is allowed within the circle. It is much more common, however, that traffic is allowed to go in one direction only around a central island. In some traffic circles, entering roads are controlled by stop signs or traffic signals. In other cases, traffic enters the circulatory roadway by merging, sometimes at relatively high speeds. The only state road with a traffic circle is on I-94 in Calhoun County. Note: A traffic circle is not the same as a roundabout.

**Traffic Conflict** - See Conflict.

**Traffic Engineer** - An experienced engineer who specializes in issues associated with the safe and efficient operation of roadway facilities.

**Traffic Operations or Safety Work** - Projects that improve the operations of a roadway or improve safety of the roadway. Operations work could include signal re-timing or adding turn lanes. Safety work could include adding a signal or reconfiguring an intersection.

**Traffic Volumes** - The actual number of vehicles passing a given point.

**Transportation Economic Development Fund (TEDF)** - A fund that provides a means for state government, local agencies and businesses to work together on highway, road, and street projects that support economic growth. It was established by the Michigan State Legislature in 1987. There are several categories of TEDF funds.

**Transportation Enhancement Funds** - This fund sets aside a portion of federal Surface Transportation Funds for landscaping and street improvements, bike trails and footpaths, mitigating highway runoff and the historic preservation of transportation-related structures. Also known as the Transportation Enhancement Activity Fund.

**Underpass** - Created when the freeway passes over a roadway, river, railroad, or other feature.

**Uniform Standards** - A policy of consistent traffic control devices on all roadway systems throughout the nation.

**Urban Area** - An urban area is a designation defined by the U.S. Bureau of Census as an area with a population over 5,000, located outside an urbanized area.

**Urbanized Area** - An area containing a city or twin cities of 50,000 or more people surrounded by a closely settled incorporated area which also meets specified criteria regarding population and density.

**U.S. Routes** - Non-interstate federal highways.

**Weigh Station** - A set of scales located alongside a freeway that verifies that trucks and buses are within the legal weight limit. (Also called Check Station.)

**Working Crack** - A crack in a pavement that changes, becoming narrower or wider, under different temperature conditions. For example, a working crack, which is typically located diagonally to the pavement centerline, develops through movement in or under the pavement when an old expansion joint fails.

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